



BILLING CODE 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XC824

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to a Pier Maintenance Project

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that we have issued an incidental harassment authorization (IHA) to the U.S. Navy (Navy) to incidentally harass, by Level B harassment only, two species of marine mammals during construction activities associated with a pier maintenance project at Naval Base Kitsap Bremerton, Washington.

DATES: This authorization is effective from December 1, 2013, through March 1, 2014.

ADDRESSES: A copy of the Navy's application and any supporting documents, as well as a list of the references cited in this document, may be obtained by visiting the internet at:

<http://www.nmfs.noaa.gov/pr/permits/incidental.htm>. In the case of problems accessing these documents, please call the contact listed below. A memorandum describing our adoption of the Navy's Environmental Assessment (2013) and our associated Finding of No Significant Impact, prepared pursuant to the National Environmental Policy Act, are also available at the same site.

FOR FURTHER INFORMATION CONTACT: Ben Laws, Office of Protected Resources, NMFS, (301) 427-8401.

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 et seq.) direct the Secretary of Commerce to allow, upon request by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified area, the incidental, but not intentional, taking of small numbers of marine mammals, providing that certain findings are made and the necessary prescriptions are established.

The incidental taking of small numbers of marine mammals may be allowed only if NMFS (through authority delegated by the Secretary) finds that the total taking by the specified activity during the specified time period will (i) have a negligible impact on the species or stock(s) and (ii) not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant). Further, the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such taking must be set forth, either in specific regulations or in an authorization.

The allowance of such incidental taking under section 101(a)(5)(A), by harassment, serious injury, death or a combination thereof, requires that regulations be established. Subsequently, a Letter of Authorization may be issued pursuant to the prescriptions established in such regulations, providing that the level of taking will be consistent with the findings made for the total taking allowable under the specific regulations. Under section 101(a)(5)(D), NMFS may authorize such incidental taking by harassment only, for periods of not more than 1 year, pursuant to requirements and conditions contained within an Incidental Harassment Authorization. The establishment of prescriptions through either specific regulations or an authorization requires notice and opportunity for public comment.

NMFS has defined “negligible impact” in 50 CFR 216.103 as “...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.” Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines “harassment” as: “...any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.” The former is termed Level A harassment and the latter is termed Level B harassment.

Summary of Request

On May 22, 2013, we received a request from the Navy for authorization of the taking, by Level B harassment only, of marine mammals incidental to pile driving in association with the Pier 6 pile replacement project at Naval Base Kitsap Bremerton, WA (NBKB). That request was modified on June 5, 2013, and a final version, which we deemed adequate and complete, was submitted on June 12, 2013. In-water work associated with the project will be conducted over three years and will occur only during the approved in-water work window from June 15 to March 1. This IHA is valid from December 1, 2013, through March 1, 2014. Two species of marine mammal are expected to be affected by the specified activities: California sea lion (*Zalophus californianus californianus*) and harbor seal (*Phoca vitulina richardii*). These species may occur year-round in the action area, although California sea lions are less common and potentially absent in the summer months.

NBKB serves as the homeport for a nuclear aircraft carrier and other Navy vessels and as a shipyard capable of overhauling and repairing all types and sizes of ships. Other significant capabilities include alteration, construction, deactivation, and dry-docking of naval vessels. Pier 6 was completed in 1926 and requires substantial maintenance to maintain readiness. Over the length of the entire project, the Navy plans to remove up to 400 deteriorating fender piles and to replace them with up to 330 new pre-stressed concrete fender piles. Under this IHA, the Navy plans to conduct 20 days of vibratory pile removal and 45 days of pile installation with an impact hammer.

Effects to marine mammals from the specified activity are expected to result from underwater sound produced by vibratory and impact pile driving. In order to assess project impacts, the Navy used thresholds recommended by NMFS, outlined later in this document. The Navy assumed practical spreading loss and used empirically-measured source levels from representative pile driving events to estimate potential marine mammal exposures. Predicted exposures are described later in this document. The calculations predict that only Level B harassment would occur associated with pile driving activities, and required mitigation measures further ensure that no more than Level B harassment would occur.

Description of the Specified Activity

Additional details regarding the specified activity were described in our Federal Register notice of proposed authorization (78 FR 56659; September 13, 2013; hereafter, the FR notice); please see that document or the Navy's application for more information.

Specific Geographic Region and Duration

NBKB is located on the north side of Sinclair Inlet in Puget Sound (see Figures 1-1 and 2-1 of the Navy's application). Sinclair Inlet, an estuary of Puget Sound extending 3.5 miles

southwesterly from its connection with the Port Washington Narrows, connects to the main basin of Puget Sound through Port Washington Narrows and then Agate Pass to the north or Rich Passage to the east. Sinclair Inlet has been significantly modified by development activities. Fill associated with transportation, commercial, and residential development of NBKB, the City of Bremerton, and the local ports of Bremerton and Port Orchard has resulted in significant changes to the shoreline. The area surrounding Pier 6 is industrialized, armored and adjacent to railroads and highways. Sinclair Inlet is also the receiving body for a wastewater treatment plant located just west of NBKB. Sinclair Inlet is relatively shallow and does not flush fully despite freshwater stream inputs.

The project is expected to require a maximum of 135 days of in-water impact pile driving work and 65 days of in-water vibratory pile removal work over a 3-year period. In-water work will occur only from June 15 to March 1 of any year. During the timeframe of this IHA (December 1, 2013-March 1, 2014), 45 days of impact pile driving and 20 days of vibratory removal are planned.

Description of Specified Activity

The Navy plans to remove deteriorated fender piles at Pier 6 and replace them with prestressed concrete piles. The entire project calls for the removal of 380 12-in diameter creosoted timber piles and twenty 12-in steel pipe piles. These would be replaced with 240 18-in square concrete piles and 90 24-in square concrete piles. It is not possible to specify accurately the number of piles that might be installed or removed in any given work window, due to various delays that may be expected during construction work and uncertainty inherent to estimating production rates. The Navy assumes a notional production rate of four piles per day in

determining the number of days of pile driving expected, and scheduling – as well as exposure analyses – is based on this assumption.

All piles are planned for removal via vibratory driver. The driver is suspended from a barge-mounted crane and positioned on top of a pile. Vibration from the activated driver loosens the pile from the substrate. Once the pile is released, the crane raises the driver and pulls the pile from the sediment. Vibratory extraction is expected to take approximately 5-30 minutes per pile. If piles break during removal, the remaining portion may be removed via direct pull or with a clamshell bucket. Replacement piles will be installed via impact driver and are expected to require approximately 15-60 minutes of driving time per pile, depending on subsurface conditions. Impact driving and/or vibratory removal could occur on any work day during the period of the IHA, but a maximum of one pile driving rig will be operating at any given time.

Description of Sound Sources and Distances to Thresholds

An in-depth description of sound sources in general was provided in the FR notice (78 FR 56659; September 13, 2013). Significant sound-producing in-water construction activities associated with the project include vibratory and impact pile driving.

Sound Thresholds

NMFS currently uses acoustic exposure thresholds as important tools to help better characterize and quantify the effects of human-induced noise on marine mammals. These thresholds have predominantly been presented in the form of single received levels for particular source categories (e.g., impulse, continuous, or explosive) above which an exposed animal would be predicted to incur auditory injury or be behaviorally harassed. Current NMFS practice (in relation to the MMPA) regarding exposure of marine mammals to sound is that cetaceans and pinnipeds exposed to sound levels of 180 and 190 dB rms or above, respectively, are considered

to have been taken by Level A (i.e., injurious) harassment, while behavioral harassment (Level B) is considered to have occurred when marine mammals are exposed to sounds at or above 120 dB rms for continuous sound (such as will be produced by vibratory pile driving) and 160 dB rms for pulsed sound (produced by impact pile driving), but below injurious thresholds. NMFS uses these levels as guidelines to estimate when harassment may occur.

NMFS is in the process of revising these acoustic thresholds, with the first step being to identify new auditory injury criteria for all source types and new behavioral criteria for seismic activities (primarily airgun-type sources). For more information on that process, please visit <http://www.nmfs.noaa.gov/pr/acoustics/guidelines.htm>.

Distance to Sound Thresholds

Underwater Sound – Pile driving generates underwater noise that can potentially result in disturbance to marine mammals in the project area. Please see the FR notice (78 FR 56659; September 13, 2013) for a detailed description of the calculations and information used to estimate distances to relevant threshold levels. In general, the sound pressure level (SPL) at some distance away from the source (e.g., driven pile) is governed by a measured source level, minus the transmission loss of the energy as it dissipates with distance. A practical spreading value of 15 (4.5 dB reduction in sound level for each doubling of distance) is often used under intermediate conditions, and is assumed here.

Source level, or the intensity of pile driving sound, is greatly influenced by factors such as the type of piles, hammers, and the physical environment in which the activity takes place. A number of studies have measured sound produced during underwater pile driving projects, primarily during work conducted by the Washington State Department of Transportation (WSDOT) and the California Department of Transportation (CalTrans). In order to determine

reasonable SPLs that are likely to result from pile driving at NBKB, the Navy evaluated existing data on the basis of pile materials and driver type. Representative data for pile driving SPLs recorded from similar construction activities in recent years were presented in the FR notice (78 FR 56659; September 13, 2013). Underwater sound levels from pile driving for this project are assumed to be as follows:

- For impact driving of concrete piles, 191 dB re 1 μ Pa (rms). This value was selected as representative of the largest concrete pile size to be installed and may be conservative when smaller concrete piles are driven (CalTrans, 2012).
 - For vibratory removal of steel piles, 170 dB re 1 μ Pa (rms). This proxy value, from the CalTrans compendium of pile driving data (CalTrans, 2012), is for vibratory installation and would likely be conservative when applied to vibratory extraction, which would be expected to produce lower SPLs than vibratory installation of same-sized piles.
 - For vibratory removal of timber piles, 168 dB re 1 μ Pa (rms). This proxy value was measured by the Washington State Department of Transportation for vibratory removal of timber piles and is the only information we are aware of for this event type (Laughlin, 2011).
- All calculated distances to and the total area encompassed by the marine mammal sound thresholds are provided in Table 1.

Description	Distance to threshold (m) and associated area of ensonification (km ²)			
	190 dB	180 dB	160 dB	120 dB
Concrete piles, impact	1.2, <0.0001	5.4, 0.0001	117, 0.04	n/a
Steel piles, vibratory	0	0	n/a	2,154 ² , 7.5

Timber piles, vibratory	0	0	n/a	1,585; 5.04
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¹ SPLs (levels at source) used for calculations were: 191 dB for impact driving, 170 dB for vibratory removal of steel piles, and 168 dB for vibratory removal of timber piles.

² Areas presented take into account attenuation and/or shadowing by land. Please see Figures B-1 and B-2 in the Navy's application.

Table 1. Calculated distance(s) to and area encompassed by underwater marine mammal sound thresholds during pile installation¹

Sinclair Inlet does not represent open water, or free field, conditions. Therefore, sounds would attenuate according to the shoreline topography. Distances shown in Table 1 are estimated for free-field conditions, but areas are calculated per the actual conditions of the action area. See Figures B-1 and B-2 of the Navy's application for a depiction of areas in which each underwater sound threshold is predicted to occur at the project area due to pile driving.

Airborne Sound – Pile driving can generate airborne sound that could potentially result in disturbance to marine mammals (specifically, pinnipeds) which are hauled out or have their heads above the water's surface. As a result, the Navy analyzed the potential for pinnipeds hauled out or swimming at the surface near NBKB to be exposed to airborne SPLs that could result in Level B behavioral harassment. Although there is no official airborne sound threshold, NMFS assumes for purposes of the MMPA that behavioral disturbance can occur upon exposure to sounds above 100 dB re 20 μ Pa rms (unweighted) for all pinnipeds, except harbor seals. For harbor seals, the threshold is 90 dB re 20 μ Pa rms (unweighted).

The potential effects of airborne sound on pinnipeds were discussed in greater detail in the FR notice (78 FR 56659; September 13, 2013). Based on available proxy data from the Navy's Test Pile Program in the Hood Canal (Illingworth & Rodkin, 2012) and from WSDOT (Laughlin, 2010), we determined that only very small zones (< 169 m²) would be ensonified. There are no haul-out opportunities within these small zones, which are encompassed by the

zones estimated for underwater sound. Protective measures will be in place out to the distances calculated for the underwater thresholds, and the distances for the airborne thresholds will be covered fully by mitigation and monitoring measures in place for underwater sound thresholds. We recognize that pinnipeds in water that are within the area of ensonification for airborne sound could be incidentally taken by either underwater or airborne sound or both. We consider these incidences of harassment to be accounted for in the take estimates for underwater sound. The effects of airborne sound are not considered further in this document's analysis.

Comments and Responses

We published a notice of receipt of the Navy's application and proposed IHA in the Federal Register on September 13, 2013 (78 FR 56659). NMFS received comments from the Marine Mammal Commission (Commission). The Commission's comments and our responses are provided here, and the comments have been posted on the internet at:

<http://www.nmfs.noaa.gov/pr/permits/incidental.htm>.

Comment 1: The Commission recommends that we require the Navy to conduct empirical in-water and in-air sound measurements during removal and installation of piles of various types and sizes and use those data to inform future IHA applications at NBKB.

Response: We agree with the Commission's statement that conducting empirical sound measurements during the first year of activities for the 3-year project at NBKB would augment the available data for the respective pile types, sizes, and locations (for which little data are available) and also would provide important information regarding verification of assumed source levels and propagation loss for use in subsequent IHA requests at NBKB. In a constrained fiscal environment, such as currently exists, applicants are generally not able to conduct acoustic source verifications in all situations where it may be desirable but must prioritize such efforts.

However, the Navy has agreed to conduct acoustic monitoring during the first year of this project as recommended by the Commission. Further details are provided below (see “Monitoring and Reporting”).

Description of Marine Mammals in the Area of the Specified Activity

There are five marine mammal species with records of occurrence in waters of Sinclair Inlet in the action area. These are the California sea lion, harbor seal, Steller sea lion (eastern stock only; Eumetopias jubatus monteriensis), gray whale (Eschrichtius robustus), and killer whale (Orcinus orca). For the killer whale, both transient (west coast stock) and resident (southern stock) animals, which are currently considered unnamed subspecies (Committee on Taxonomy, 2012), have occurred in the area. However, southern resident animals are known to have occurred only once, with the last confirmed sighting from 1997 in Dyes Inlet. A group of 19 whales from the L-25 subpod entered and stayed in Dyes Inlet, which connects to Sinclair Inlet northeast of NBKB, for 30 days. Dyes Inlet may be reached only by traversing from Sinclair Inlet through the Port Washington Narrows, a narrow connecting body that is crossed by two bridges, and it was speculated at the time that the whales’ long stay was the result of a reluctance to traverse back through the Narrows and under the two bridges. There is one other unconfirmed report of a single southern resident animal occurring in the project area, in January 2009. Of these stocks, the Steller sea lion and southern resident killer whales are listed under the Endangered Species Act (ESA), with the eastern stock of Steller sea lions listed as threatened and the southern resident stock of killer whales listed as endangered. The FR notice (78 FR 56659; September 13, 2013) summarizes the population status and abundance of these species and discusses additional species known from Puget Sound, and the Navy’s application provides

detailed life history information. Table 2 lists the marine mammal species with expected potential for occurrence in the vicinity of NBKB during the project timeframe.

Species	Stock abundance ¹ (CV, N _{min})	Relative occurrence in Sinclair Inlet	Season of occurrence
California sea lion U.S. Stock	296,750 (n/a, 153,337)	Common	Year-round, excluding July
Harbor seal WA inland waters stock	14,612 ² (0.15, 12,844)	Common	Year-round
Steller sea lion Eastern stock	58,334-72,223 (n/a, 52,847)	Occasional presence	Seasonal (Oct-May)
Killer whale West Coast transient stock	354 (n/a)	Uncommon	Year-round
Gray whale Eastern North Pacific stock	19,126 (0.071, 18,017)	Uncommon	Year-round

¹ NMFS marine mammal stock assessment reports at: <http://www.nmfs.noaa.gov/pr/sars/species.htm>. CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance.

² This abundance estimate is greater than eight years old and is therefore not considered current.

Table 2. Marine mammals potentially present in the vicinity of NBKB

Potential Effects of the Specified Activity on Marine Mammals

We have determined that pile driving, as outlined in the project description, has the potential to result in behavioral harassment of marine mammals that may be present in the project vicinity while construction activity is being conducted. The FR notice (78 FR 56659; September 13, 2013) provides a detailed description of marine mammal hearing and of the potential effects of these construction activities on marine mammals.

Anticipated Effects on Habitat

The planned activities at NBKB would not result in permanent impacts to habitats used directly by marine mammals, but may have potential short-term impacts to food sources such as forage fish and may affect acoustic habitat (see masking discussion in proposed IHA FR notice).

There are no rookeries or major haul-out sites, no known foraging hotspots, or other ocean bottom structure of significant biological importance to marine mammals present in the marine waters in the vicinity of the project area. Therefore, the main impact issue associated with the specified activity would be temporarily elevated sound levels and the associated direct effects on marine mammals, as discussed previously in the proposed IHA FR notice. The most likely impact to marine mammal habitat occurs from pile driving effects on likely marine mammal prey (i.e., fish) near NBKB and minor impacts to the immediate substrate during installation and removal of piles during the project. The FR notice (78 FR 56659; September 13, 2013) describes these potential impacts in greater detail.

Mitigation

In order to issue an incidental take authorization (ITA) under section 101(a)(5)(D) of the MMPA, we must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses (where relevant).

Measurements from proxy pile driving events were coupled with practical spreading loss to estimate zones of influence (ZOIs; see “Estimated Take by Incidental Harassment”); these values were used to develop mitigation measures for pile driving activities at NBKB. The ZOIs effectively represent the mitigation zone that would be established around each pile to prevent Level A harassment to marine mammals, while providing estimates of the areas within which Level B harassment might occur. In addition to the specific measures described later in this section, the Navy will conduct briefings between construction supervisors and crews, marine mammal monitoring team, and Navy staff prior to the start of all pile driving activity, and when

new personnel join the work, in order to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.

Monitoring and Shutdown for Pile Driving

The following measures apply to the Navy's mitigation through shutdown and disturbance zones:

Shutdown Zone – For all pile driving and removal activities, the Navy will establish a shutdown zone intended to contain the area in which SPLs equal or exceed the 190 dB rms acoustic injury criterion. The purpose of a shutdown zone is to define an area within which shutdown of activity would occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area), thus preventing injury, serious injury, or death of marine mammals. Radial distances for shutdown zones are shown in Table 1. However, for this project, a minimum shutdown zone of 10 m will be established during all pile driving activities, regardless of the estimated zone. Vibratory pile driving activities are not predicted to produce sound exceeding the Level A standard, but these precautionary measures are intended to prevent the already unlikely possibility of physical interaction with construction equipment and to further reduce any possibility of acoustic injury.

Disturbance Zone – Disturbance zones are the areas in which SPLs equal or exceed 160 and 120 dB rms (for pulsed and non-pulsed sound, respectively). Disturbance zones provide utility for monitoring conducted for mitigation purposes (i.e., shutdown zone monitoring) by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring of disturbance zones enables observers to be aware of and communicate the presence of marine mammals in the project area but outside the shutdown zone and thus prepare for potential shutdowns of activity. However, the primary purpose of disturbance zone monitoring is for

documenting incidents of Level B harassment; disturbance zone monitoring is discussed in greater detail later (see “Monitoring and Reporting”). Nominal radial distances for disturbance zones are shown in Table 1.

In order to document observed incidences of harassment, monitors record all marine mammal observations, regardless of location. The observer’s location, as well as the location of the pile being driven, is known from a GPS. The location of the animal is estimated as a distance from the observer, which is then compared to the location from the pile. It may then be estimated whether the animal was exposed to sound levels constituting incidental harassment on the basis of predicted distances to relevant thresholds in post-processing of observational and acoustic data, and a precise accounting of observed incidences of harassment created. This information may then be used to extrapolate observed takes to reach an approximate understanding of actual total takes.

Monitoring Protocols – Monitoring will be conducted before, during, and after pile driving activities. In addition, observers shall record all incidences of marine mammal occurrence, regardless of distance from activity, and shall document any behavioral reactions in concert with distance from piles being driven. Observations made outside the shutdown zone will not result in shutdown; that pile segment would be completed without cessation, unless the animal approaches or enters the shutdown zone, at which point all pile driving activities would be halted. Please see the Monitoring Plan (Appendix C in the Navy’s application), developed by the Navy in agreement with NMFS, for full details of the monitoring protocols. Monitoring will take place from 15 minutes prior to initiation through 30 minutes post-completion of pile driving activities. Pile driving activities include the time to remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than 30 minutes.

The following additional measures apply to visual monitoring:

(1) Monitoring will be conducted by qualified observers, who will be placed at the best vantage point(s) practicable to monitor for marine mammals and implement shutdown/delay procedures when applicable by calling for the shutdown to the hammer operator. Qualified observers are trained biologists, with the following minimum qualifications:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;
- Advanced education in biological science, wildlife management, mammalogy, or related fields (bachelor's degree or higher is required);
- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience);
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound of marine mammals observed within a defined shutdown zone; and marine mammal behavior; and

- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

(2) Prior to the start of pile driving activity, the shutdown zone will be monitored for 15 minutes to ensure that it is clear of marine mammals. Pile driving will only commence once observers have declared the shutdown zone clear of marine mammals; animals will be allowed to remain in the shutdown zone (i.e., must leave of their own volition) and their behavior will be monitored and documented. The shutdown zone may only be declared clear, and pile driving started, when the entire shutdown zone is visible (i.e., when not obscured by dark, rain, fog, etc.). In addition, if such conditions should arise during impact pile driving that is already underway, the activity will be halted.

(3) If a marine mammal approaches or enters the shutdown zone during the course of pile driving operations, activity will be halted and delayed until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone or 15 minutes have passed without re-detection of the animal. Monitoring will be conducted throughout the time required to drive a pile.

Special Conditions

The Navy has not requested the authorization of incidental take for Steller sea lions, killer whales, or gray whales (see discussion in Estimated Take by Incidental Harassment). Therefore, shutdown would be implemented in the event that a Steller sea lion or any cetacean is observed upon sighting within (or in anticipation of entering) the defined disturbance zone. As described later in this document, we believe that occurrence of any of these species during the in-water work window would be uncommon. For gray and killer whales, in particular, the occurrence of

an individual or group would likely be highly noticeable and would attract significant attention in local media and with local whale watchers and interested citizens.

Prior to the start of pile driving on any day, the Navy will contact and/or review the latest sightings data from the Orca Network and/or Center for Whale Research to determine the location of the nearest marine mammal sightings. The Orca Sightings Network consists of a list of over 600 residents, scientists, and government agency personnel in the U.S. and Canada, and includes passive acoustic detections. The presence of a killer whale or gray whale in the southern reaches of Puget Sound would be a notable event, drawing public attention and media scrutiny. With this level of coordination in the region of activity, the Navy should be able to effectively receive real-time information on the presence or absence of whales, sufficient to inform the day's activities. Pile removal or driving would not occur if there was the risk of incidental harassment of a species for which incidental take was not authorized.

Prior to beginning pile driving on each day, monitors will scan the floating security barrier to ensure that no Steller sea lions are present. During vibratory pile removal, four land-based observers will monitor the area; these will be positioned with two at the pier work site, one at the eastern extent of the ZOI in the Manette neighborhood of Bremerton, and one at the southern extent of the ZOI near the Annapolis ferry landing in Port Orchard (please see Figure 1 of Appendix C in the Navy's application). Additionally, one vessel-based observer will travel through the monitoring area, completing an entire loop approximately every 30 minutes. If any killer whales, grey whales, or Steller sea lions are detected, activity will not begin or will shut down.

Timing Restrictions

In the project area, designated timing restrictions exist to avoid in-water work when salmonids and other spawning forage fish are likely to be present. The in-water work window is June 15-March 1. All in-water construction activities would occur only during daylight hours (sunrise to sunset).

Soft Start

The use of a soft-start procedure is believed to provide additional protection to marine mammals by warning or providing a chance to leave the area prior to the hammer operating at full capacity, and typically involves a requirement to initiate sound from vibratory hammers for fifteen seconds at reduced energy followed by a 30-second waiting period. This procedure is repeated two additional times. However, implementation of soft start for vibratory pile driving during previous pile driving work conducted by the Navy at another location has led to equipment failure and serious human safety concerns. Therefore, vibratory soft start is not required as a mitigation measure for this project, as we have determined it not to be practicable. We have further determined this measure unnecessary to providing the means of effecting the least practicable impact on marine mammals and their habitat. Prior to issuing any further IHAs to the Navy for pile driving activities in 2014 and beyond, we plan to facilitate consultation between the Navy and other practitioners (e.g., Washington State Department of Transportation and/or the California Department of Transportation) in order to determine whether the potentially significant human safety issue is inherent to implementation of the measure or is due to operator error. For impact driving, soft start will be required, and contractors will provide an initial set of three strikes from the impact hammer at 40 percent energy, followed by a 30-second waiting period, then two subsequent three-strike sets.

We have carefully evaluated the applicant's planned mitigation measures and considered a range of other measures in the context of ensuring that we prescribe the means of effecting the least practicable impact on the affected marine mammal species and stocks and their habitat. Our evaluation of potential measures included consideration of the following factors in relation to one another: (1) the manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts to marine mammals; (2) the proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and (3) the practicability of the measure for applicant implementation.

Based on our evaluation of the applicant's planned measures, as well as any other potential measures that may be relevant to the specified activity, we have determined that these mitigation measures provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an ITA for an activity, section 101(a)(5)(D) of the MMPA states that we must set forth "requirements pertaining to the monitoring and reporting of such taking". The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for ITAs must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the action area. The Navy's planned monitoring and reporting is also described in their Marine Mammal Monitoring Plan (Appendix C of the Navy's application).

Acoustic Monitoring

The Navy will implement a sound source level verification study during the specified activities. Data will be collected in order to estimate airborne and underwater source levels for vibratory removal of timber piles and impact driving of concrete piles, with measurements conducted for ten piles of each type. Monitoring will include one underwater and one airborne monitoring position. These exact positions will be determined in the field during consultation with Navy personnel, subject to constraints related to logistics and security requirements. Reporting of measured sound level signals will include the average, minimum, and maximum rms value and frequency spectra for each pile monitored. Please see section 11.4.4 for details of the Navy's acoustic monitoring plan.

Visual Marine Mammal Observations

The Navy will collect sighting data and behavioral responses to construction for marine mammal species observed in the region of activity during the period of activity. All observers will be trained in marine mammal identification and behaviors and are required to have no other construction-related tasks while conducting monitoring. The Navy will monitor the shutdown zone and disturbance zone before, during, and after pile driving, with observers located at the best practicable vantage points. Based on our requirements, the Navy will implement the following procedures for pile driving:

- MMOs will be located at the best vantage point(s) in order to properly see the entire shutdown zone and as much of the disturbance zone as possible.
- During all observation periods, observers will use binoculars and the naked eye to search continuously for marine mammals.

- If the shutdown zones are obscured by fog or poor lighting conditions, pile driving at that location will not be initiated until that zone is visible. Should such conditions arise while impact driving is underway, the activity would be halted.

- The shutdown and disturbance zones around the pile will be monitored for the presence of marine mammals before, during, and after any pile driving or removal activity.

During vibratory pile removal, four observers will be deployed as described under the preceding mitigation discussion, including four land-based observers and one-vessel-based observer traversing the extent of the Level B harassment zone. During impact driving, one observer will be positioned at or near the pile to observe the much smaller disturbance zone.

Individuals implementing the monitoring protocol will assess its effectiveness using an adaptive approach. Monitoring biologists will use their best professional judgment throughout implementation and seek improvements to these methods when deemed appropriate. Any modifications to protocol will be coordinated between NMFS and the Navy.

Data Collection

We require that observers use approved data forms. Among other pieces of information, the Navy will record detailed information about any implementation of shutdowns, including the distance of animals to the pile and description of specific actions that ensued and resulting behavior of the animal, if any. In addition, the Navy will attempt to distinguish between the number of individual animals taken and the number of incidences of take. We require that, at a minimum, the following information be collected on the sighting forms:

- Date and time that monitored activity begins or ends;
- Construction activities occurring during each observation period;

- Weather parameters (e.g., percent cover, visibility);
- Water conditions (e.g., sea state, tide state);
- Species, numbers, and, if possible, sex and age class of marine mammals;
- Description of any observable marine mammal behavior patterns, including bearing and direction of travel, and if possible, the correlation to SPLs;
- Distance from pile driving activities to marine mammals and distance from the marine mammals to the observation point;
- Locations of all marine mammal observations;
- Other human activity in the area; and
- Description of implementation of mitigation measures (e.g., shutdown or delay).

Reporting

A draft report will be submitted to NMFS within 45 days of the completion of marine mammal and acoustic monitoring, or 60 days prior to the issuance of any subsequent IHA for this project, whichever comes first. The report will include marine mammal observations pre-activity, during-activity, and post-activity during pile driving days, and will also provide descriptions of any adverse responses to construction activities by marine mammals and a complete description of all mitigation shutdowns and the results of those actions and a refined take estimate based on the number of marine mammals observed during the course of construction. Reporting will also include the results of the acoustic monitoring effort. A final report will be prepared and submitted within 30 days following resolution of comments on the draft report.

Estimated Take by Incidental Harassment

With respect to the activities described here, the MMPA defines "harassment" as: "any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment]." All anticipated takes will be by Level B harassment, involving temporary changes in behavior. The planned mitigation and monitoring measures are expected to minimize the possibility of injurious or lethal takes such that take by Level A harassment, serious injury, or mortality is considered discountable. However, it is unlikely that injurious or lethal takes would occur even in the absence of the planned mitigation and monitoring measures.

If a marine mammal responds to a stimulus by changing its behavior (e.g., through relatively minor changes in locomotion direction/speed or vocalization behavior), the response may or may not constitute taking at the individual level, and is unlikely to affect the stock or the species as a whole. However, if a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on animals or on the stock or species could potentially be significant (Lusseau and Bejder, 2007; Weilgart, 2007). Given the many uncertainties in predicting the quantity and types of impacts of sound on marine mammals, it is common practice to estimate how many animals are likely to be present within a particular distance of a given activity, or exposed to a particular level of sound. This practice potentially overestimates the numbers of marine mammals taken. In addition, it is often difficult to distinguish between the number of individuals harassed and incidences of harassment. In particular, for stationary activities, it is more likely that some smaller number of individuals may accrue a number of incidences of harassment per individual than for each incidence to accrue to a

new individual, especially if those individuals display some degree of residency or site fidelity and the impetus to use the site (e.g., because of foraging opportunities) is stronger than the deterrence presented by the harassing activity.

The project area is not believed to be particularly important habitat for marine mammals, nor is it considered an area frequented by marine mammals, although harbor seals may be present year-round and sea lions are known to haul-out on man-made objects at the NBKB waterfront. Sightings of other species are rare. Therefore, behavioral disturbances that could result from anthropogenic sound associated with these activities are expected to affect only a relatively small number of individual marine mammals, although those effects could be recurring over the life of the project if the same individuals remain in the project vicinity. The Navy requested authorization for the incidental taking of small numbers of harbor seals and California sea lions in Sinclair Inlet and nearby waters that may be ensonified by project activities.

Marine Mammal Densities

For all species, the best scientific information available was used to derive density estimates and the maximum appropriate density value for each species was considered for use in the marine mammal take assessment calculations. These values, shown in Table 3 below, were derived or confirmed by experts convened to develop such information for use in Navy environmental compliance efforts in the Pacific Northwest, including Washington inland waters. The Navy Marine Species Density Database (NMSDD) density estimates were recently finalized, and use data from local marine mammal data sets, expert opinion, and survey data from Navy biologists and other agencies. A technical report documenting methodologies used to derive these densities and relevant background data is still in development (DoN, in prep.). These data are generally considered the best available information for Washington inland waters, except

where specific local abundance information is available. At NBKB, the Navy began collecting opportunistic observational data of animals hauled-out on the floating security barrier. These surveys began in February 2010 and have been conducted approximately monthly from September 2010 through present (DoN, 2013). In addition, WSDOT recently conducted in-water pile driving over the course of multiple work windows as part of the Manette Bridge construction project in the nearby Port Washington Narrows. WSDOT conducted required marine mammal monitoring as part of this project (WSDOT, 2011, 2012; Rand, 2011). We determined, for both harbor seals and California sea lions, that these sources of local abundance information comprise the best available data for use in the take assessment calculations, as described below.

Species	Density (Sinclair Inlet), #/km ²
Harbor seal	0.4267
California sea lion	0.13
Steller sea lion	0.037
Transient killer whale	0.0024
Gray whale	0.0005

Table 3. Maximum marine mammal density estimates for NBKB (Sinclair Inlet)

Description of Take Calculation

The take calculations presented here rely on the best data currently available for marine mammal populations in Puget Sound. The methodology for estimating take was described in detail in the FR notice (78 FR 56659; September 13, 2013). The ZOI impact area is the estimated range of impact to the sound criteria. The distances specified in Table 1 were used to calculate ZOIs around each pile. The ZOI impact area calculations took into consideration the possible affected area with attenuation due to the topographical constraints of Sinclair Inlet, and the radial distances to thresholds are not always reached.

While pile driving can occur any day, and the analysis is conducted on a per day basis, only a fraction of that time (typically a matter of hours on any given day) is actually spent pile

driving. The exposure assessment methodology is an estimate of the numbers of individuals exposed to the effects of pile driving activities exceeding NMFS-established thresholds. Of note in these exposure estimates, mitigation methods (i.e., visual monitoring and the use of shutdown zones; soft start for impact pile driving) were not quantified within the assessment and successful implementation of mitigation is not reflected in exposure estimates. In addition, equating exposure with response (i.e., a behavioral response meeting the definition of take under the MMPA) is simplistic and conservative assumption. For these reasons, results from this acoustic exposure assessment likely overestimate take estimates to some degree. Species-specific information and considerations in the take estimation process are detailed here.

Harbor Seal – While no harbor seal haul-outs are present in the action area or in the immediate vicinity of NBKB, haul-outs are present elsewhere in Sinclair Inlet and in other nearby waters and harbor seals may haul out on available objects opportunistically. Use of the NMSDD density value (0.4267 animals/km²; corrected for proportion of animals hauled-out at any given time) would result in an estimate of 2-3 incidences of harassment per day; it is likely that this would not adequately represent the potential presence of harbor seals given observed occurrence at other nearby construction projects. Marine mammal monitoring conducted during pile driving work on the Manette Bridge showed variable numbers of harbor seals (but generally greater than indicated by the NMSDD density). During the first year of construction (in-water work window only), an average of 3.7 harbor seals were observed per day of monitoring with a maximum of 59 observed in October 2011 (WSDOT, 2011; Rand, 2011). During the most recent construction period (July-November 2012), an average of eleven harbor seals per monitoring day was observed, though some animals were likely counted multiple times (WSDOT, 2012). Given the potential for similar occurrence of harbor seals in the vicinity of NBKB during the in-water

construction period, we determined it appropriate to use this most recent, local abundance information in the take assessment calculation.

California Sea Lion – Similar to harbor seals, it is not likely that use of the NMSDD density value for California sea lions (0.13 animals/km²) would adequately represent their potential occurrence in the project area. California sea lions are commonly observed hauled out on the floating security barrier which is in close proximity to Pier 6; counts from 34 surveys (March 2010-June 2013) showed an average of 42 individuals per survey day (range 0-144; DoN, 2013). These counts represent the best local abundance data available and were used in the take assessment calculation.

Steller Sea Lion – No Steller sea lion haul-outs are present within or near the action area, and Steller sea lions have not been observed during Navy waterfront surveys or during monitoring associated with the Manette Bridge construction project. It is assumed that the possibility exists that a Steller sea lion could occur in the project area, but there is no known attractant in Sinclair Inlet, which is a relatively muddy, industrialized area, and the floating security barrier that California sea lions use as an opportunistic haul-out cannot generally accommodate the larger adult Steller sea lions (juveniles could haul-out on the barrier). Use of the NMSDD density estimate (0.037 animals/km²) results in an estimate of zero exposures, and there are no existing data to indicate that Steller sea lions would occur more frequently locally. Therefore, the Navy did not request the authorization of incidental take for Steller sea lions and we have not issued such authorization. The Navy would not begin activity or would shut down upon report of a Steller sea lion present within or approaching the relevant ZOI.

Killer Whale – Transient killer whales are rarely observed in the project area, with records since 2002 showing one group transiting through the area in May 2004 and a subsequent,

similar observation in May 2010. No other observations have occurred during Navy surveys or during project monitoring for Manette Bridge. Use of the NMSDD density estimate (0.0024 animals/km²) results in an estimate of zero exposures, and there are no existing data to indicate that killer whales would occur more frequently locally. Therefore, the Navy did not request the authorization of incidental take for transient killer whales and we have not issued such authorization. The Navy would not begin activity or would shut down upon report of a killer whale present within or approaching the relevant ZOI.

Gray Whale – Gray whales are rarely observed in the project area, and the majority of in-water work would occur when whales are relatively less likely to occur (i.e., outside of March-May). Since 2002 and during the in-water work window, there are observational records of three whales (all during winter 2008-09) and a stranding record of a fourth whale (January 2013). No other observations have occurred during Navy surveys or during project monitoring for Manette Bridge. Use of the NMSDD density estimate (0.0005 animals/km²) results in an estimate of zero exposures, and there are no existing data to indicate that gray whales would occur more frequently locally. Therefore, the Navy did not request the authorization of incidental take for gray whales and we have not issued such authorization. The Navy would not begin activity or would shut down upon report of a gray whale present within or approaching the relevant ZOI.

Species	Exposure estimate
Harbor seal ¹	715
California sea lion ²	2,730
Steller sea lion	0
Transient killer whale	0
Gray whale	0

¹ Use of NMSDD density results in estimated range of potential exposures of 130-195. Local abundance data were used in exposure assessment, i.e., 11 harbor seals potentially exposed per day for 65 days of pile driving.

² Use of NMSDD density results in estimated potential exposures of 65. Local abundance data were used in exposure assessment, i.e., 42 California sea lions potentially exposed per day for 65 days of pile driving.

Table 4. Number of potential incidental takes of marine mammals

For the Steller sea lion, transient killer whale, and gray whale, available information indicates that presence of these species is sufficiently rare to make exposure unlikely. Further, the Navy's monitoring plan further mitigates any such possibility to the point that we consider it discountable and have not authorized incidental take for these three species.

Negligible Impact and Small Numbers Analyses and Determinations

NMFS has defined "negligible impact" in 50 CFR 216.103 as "...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival." In making a negligible impact determination, we considers a variety of factors, including but not limited to: (1) the number of anticipated mortalities; (2) the number and nature of anticipated injuries; (3) the number, nature, intensity, and duration of Level B harassment; and (4) the context in which the take occurs.

Small Numbers Analysis

The number of incidences of take authorized for harbor seals and California sea lions would be considered small relative to the relevant stocks or populations (less than five percent and one percent, respectively) even if each estimated taking occurred to a new individual. This is an extremely unlikely scenario as, for pinnipeds in estuarine/inland waters, there is likely to be some overlap in individuals present day-to-day.

Negligible Impact Analysis

Pile driving activities associated with the Navy's pier maintenance project, as outlined previously, have the potential to disturb or displace marine mammals. Specifically, the specified activities may result in take, in the form of Level B harassment (behavioral disturbance) only, from underwater sounds generated from pile driving and removal. Potential takes could occur if

individuals of these species are present in the ensonified zone when the specified activity is occurring.

No injury, serious injury, or mortality is anticipated given the nature of the activity and measures designed to minimize the possibility of injury to marine mammals. The potential for these outcomes is minimized through the construction method and the implementation of the planned mitigation measures. Specifically, piles will be removed via vibratory means – an activity that does not have the potential to cause injury to marine mammals due to the relatively low source levels produced (less than 180 dB) and the lack of potentially injurious source characteristics – and, while impact pile driving produces short, sharp pulses with higher peak levels and much sharper rise time to reach those peaks, only small diameter concrete piles are planned for impact driving. Predicted source levels for such impact driving events are significantly lower than those typical of impact driving of steel piles and/or larger diameter piles. In addition, implementation of soft start and shutdown zones significantly reduces any possibility of injury. Given sufficient “notice” through use of soft start (for impact driving), marine mammals are expected to move away from a sound source that is annoying prior to its becoming potentially injurious. Environmental conditions in Sinclair Inlet are expected to generally be good, with calm sea states, although Sinclair Inlet waters may be more turbid than those further north in Puget Sound or in Hood Canal. Nevertheless, we expect conditions in Sinclair Inlet to allow a high marine mammal detection capability for the trained observers required, enabling a high rate of success in implementation of shutdowns to avoid injury, serious injury, or mortality. In addition, the topography of Sinclair Inlet should allow for placement of observers sufficient to detect cetaceans, should any occur (see Figure 1 of Appendix C in the Navy’s application).

Effects on individuals that are taken by Level B harassment, on the basis of reports in the literature as well as monitoring from other similar activities, will likely be limited to reactions such as increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring) (e.g., Thorson and Reyff, 2006; HDR, Inc., 2012). Most likely, individuals will simply move away from the sound source and be temporarily displaced from the areas of pile driving, although even this reaction has been observed primarily only in association with impact pile driving. The pile driving activities analyzed here are similar to, or less impactful than, numerous other construction activities conducted in San Francisco Bay and in the Puget Sound region, which have taken place with no reported injuries or mortality to marine mammals, and no known long-term adverse consequences from behavioral harassment. Repeated exposures of individuals to levels of sound that may cause Level B harassment are unlikely to result in hearing impairment or to significantly disrupt foraging behavior. Thus, even repeated Level B harassment of some small subset of the overall stock is unlikely to result in any significant realized decrease in viability for the affected individuals, and thus would not result in any adverse impact to the stock as a whole. Level B harassment will be reduced to the level of least practicable impact through use of mitigation measures described herein and, if sound produced by project activities is sufficiently disturbing, animals are likely to simply avoid the area – which is not believed to provide any habitat of special significance – while the activity is occurring.

In summary, this negligible impact analysis is founded on the following factors: (1) the possibility of injury, serious injury, or mortality may reasonably be considered discountable; (2) the anticipated incidences of Level B harassment consist of, at worst, temporary modifications in behavior; (3) the absence of any significant habitat within the project area, including rookeries, significant haul-outs, or known areas or features of special significance for foraging or

reproduction; (4) the presumed efficacy of the planned mitigation measures in reducing the effects of the specified activity to the level of least practicable impact. In addition, neither of these stocks are listed under the ESA or considered depleted under the MMPA. In combination, we believe that these factors, as well as the available body of evidence from other similar activities, demonstrate that the potential effects of the specified activity will have only short-term effects on individuals. The specified activity is not expected to impact rates of recruitment or survival and will therefore not result in population-level impacts.

Determinations

The number of marine mammals actually incidentally harassed by the project will depend on the distribution and abundance of marine mammals in the vicinity of the activity. However, we find that the number of potential takings authorized (by level B harassment only), which we consider to be a conservative, maximum estimate, is small relative to the relevant regional stock or population numbers, and that the effect of the activity will be mitigated to the level of least practicable impact through implementation of the mitigation and monitoring measures described previously. Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, we find that the total taking from the activity will have a negligible impact on the affected species or stocks.

Impact on Availability of Affected Species for Taking for Subsistence Uses

There are no relevant subsistence uses of marine mammals implicated by this action. Therefore, we have determined that the total taking of affected species or stocks will not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act (ESA)

There are no ESA-listed marine mammals expected to occur in the action area. Therefore, the Navy has not requested authorization of the incidental take of ESA-listed species and no such authorization is issued; therefore, no consultation under the ESA is required.

National Environmental Policy Act (NEPA)

In compliance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), as implemented by the regulations published by the Council on Environmental Quality (40 CFR parts 1500-1508), the Navy prepared an Environmental Assessment (EA) to consider the direct, indirect and cumulative effects to the human environment resulting from the pier maintenance project. NMFS made the Navy's EA available to the public for review and comment, in relation to its suitability for adoption by NMFS in order to assess the impacts to the human environment of issuance of an IHA to the Navy. Also in compliance with NEPA and the CEQ regulations, as well as NOAA Administrative Order 216-6, NMFS has reviewed the Navy's EA, determined it to be sufficient, and adopted that EA and signed a Finding of No Significant Impact (FONSI) on November 8, 2013. The Navy's EA and NMFS' FONSI for this action may be found at <http://www.nmfs.noaa.gov/pr/permits/incidental.htm>.

Authorization

As a result of these determinations, we have issued an IHA to the Navy to conduct the specified activities at Naval Base Kitsap Bremerton, WA for the period from December 1, 2013, through March 1, 2014, provided the previously described mitigation, monitoring, and reporting requirements are incorporated.

Dated: November 15, 2013

Helen M. Golde,
Deputy Director,
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National Marine Fisheries Service.

[FR Doc. 2013-27867 Filed 11/20/2013 at 8:45 am; Publication Date: 11/21/2013]